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Counting the dead in a time of pandemics

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This commentary is part of a CCAPC series on Communicating air pollution-linked risks in India in light of COVID-19 (https://ccapc.org.in/policy-briefs/2020/covid-aq-india)**. CCAPC/2020/04 | September 2020 | Edited by Santosh Harish | Posted: September 1, 2020**

Author's note: This compendium of articles is a testament to the wide admiration many epidemiologists have for the late Professor Kirk Smith, a remarkable scientist and a very kind human being. My contribution will be to discuss what I believe Professor Smith would have asked me to do: provide a brief scrutiny about the need to understand the metrics of deaths attributable to SARS-CoV-2. Understanding the current first wave of the coronavirus disease (COVID) pandemic is essential to planning for possible subsequent waves [1-2] . As Professor Smith recognized, reliable mortality data are essential to document regular deaths and risk factors, including mortality from environmental exposures on which he did such excellent work. But it is also useful during pandemics, and here, I focus on counting the deaths during the COVID pandemic.

Excess deaths from COVID in settings with nearly universal death certification

COVID mortality has crossed 600,000 deaths worldwide, and has been currently concentrated in the mostly high-income countries in Europe and North America and in middle-income countries in Latin America (as of July 24, 2020) [1-2]. In these settings, nearly all deaths are captured, registered and medically certified [3]. While data from national death certification systems are not immediately available, these countries also have separate reporting systems, usually to public authorities. Daily COVID death reports by these authorities provide a useful way to track the epidemic curve in particular geographic areas. Unlike testing, COVID deaths are largely unaffected by variations and biases in who is tested over time. Once deaths undergo certification, deaths can be attributed to COVID, for which World Health Organization (WHO) has created a new International Classification of Diseases (ICD-10) code. In some countries (e.g., the Netherlands), only deaths of people testing positive for SARS-CoV-2 are counted as definitely due to the virus. Hence, deaths attributed to COVID could be taken as a lower limit. Missing deaths are uncommon in each of the above settings [3], but during the peak crisis period, missing deaths have ranged up to 40% or higher, as noted by several journalist reviews such as the *Economist* and *Financial Times*. Moreover, reporting will be delayed. Of course, the actual number of COVID deaths is related both to the number of infections as well as success in managing severe disease, and there is some suggestion that this has also changed in recent weeks, with divergence of cases and deaths [1-2].

Tracking COVID deaths in lower-income countries

The evolution of COVID epidemics in low- and middle-income countries (LMIC) outside of China is largely undocumented. Many such countries in Asia and Africa lack both adequate death registration and medical certification [4], and also have limited public health reporting. Under the best of circumstances, most deaths occur at home without medical attention. Hence, unlike in the above settings, a large increase in COVID deaths might go undetected. South Africa has a reasonable mortality surveillance system, and India, Mozambique, and Sierra Leone implement verbal autopsies among random samples of deaths, including the Indian Million Death Study (MDS) [5]. However, most other LMICs have no such systems. Unfortunately, the government of India has not reported MDS data since 2014.

Emergency, albeit imperfect, solutions to gather better mortality data need to be considered. Many city authorities in LMICs record deaths. They can start daily reporting of all deaths (regardless of cause) by age and sex. This would provide a crude baseline to assess mortality from COVID, if indeed there is a large excess in overall mortality from COVID. Media reports of these analyses show excess deaths in most urban settings nearly everywhere, consistent with COVID deaths. Another feasible strategy might be to conduct SARS-CoV-2 antigen and antibody testing among a convenient sample of post-mortems that are done in various LMICs. A similar post-mortem study in South Africa was able to establish that HIV was common in the population, by showing high prevalence in adults killed in road traffic accidents or from causes unrelated to HIV [6]. Post-mortem sampling would have obvious biases, but could nonetheless give some crude estimate of COVID distribution and background prevalence. Finally, the COVID pandemic is a sharp reminder about the need to expand the number of LMICs that conduct nationwide cause-of-death surveys on random populations [7-8].

In sum, a proper understanding of excess COVID deaths and death rates attributable to infection from SARS-CoV-2 is central to understanding the expected current and future waves of the pandemic. This information is also central to planning to meet the needs of the sickest patients in areas where the pandemic is still evolving, and to tracking the progress of control interventions. Moreover, as experience from H1N1 revealed [9], reliable infection and mortality data are essential to establish the age- and sex-specific infection fatality rate, and to avoid often inflated projections based on the cases reported early on in an outbreak. Reliable mortality statistics should be less biased by changes in who is tested or changes in case definitions. This in turn can help produce better mathematical projection models.

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References:

1. Worldometers.info. Worldometer: Coronavirus. Dover, DE: Worldometers.info. 2020 - [updated 2020 Jul 24]. https://www.worldometers.info/coronavirus/ (https://www.worldometers.info/coronavirus/)
2. Applied XL, STAT. The Covid-19 Tracker. Boston: STAT. 2020 - [updated 2020 Jul 23]. https://www.statnews.com/2020/03/26/covid-19-tracker/ (https://www.statnews.com/2020/03/26/covid-19-tracker/)
3. World Health Organization. World health statistics 2018: monitoring health for the SDGs. Geneva: WHO; 2018. https://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf (https://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf)
4. Jha P. Reliable direct measurement of causes of death in low- and middle-income countries. BMC Med. 2014 Feb;12:19. doi: 10.1186/1741-7015-12-19.
5. Gomes M, Begum R, Sati P, et al. Nationwide mortality studies to quantify causes of death: relevant lessons from India's Million Death Study. Health Affairs. 2017 Nov;36(11):1887-95. doi: 10.1377/hlthaff.2017.0635.
6. Pillay-van Wyk V, Msemburi W, Laubscher R, et al. Mortality trends and differentials in South Africa from 1997 to 2012: second National Burden of Disease Study. Lancet Glob Health. 2016 Sep;4(9):e642-53. doi: 10.1016/S2214-109X(16)30113-9.
7. Menon GR, Singh L, Sharma P, et al. National Burden Estimates of healthy life lost in India, 2017: an analysis using direct mortality data and indirect disability data. Lancet Glob Health. 2019 Dec;7(12):e1675-84. doi: 10.1016/S2214-109X(19)30451-6.
8. Kavanagh MM, Katz IT, Holmes CB. Reckoning with mortality: global health, HIV, and the politics of data. Lancet. 2020 Jul; 396:288-90. doi: 10.1016/ S0140-6736(20)31046-1.
9. Low DE, McGeer A. Pandemic (H1N1) 2009: assessing the response. CMAJ. 2010 Nov;182:1874-8. doi: 10.1503/cmaj.100900.

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